

REMARKS*A. Status of Application*

The Specification has been reviewed and amended to correct inadvertent typographical errors in response to the request by the Office. *See* page 2 of the Office Action mailed 8/29/05. No new matter was introduced. Claims 1, 3-5, 11, and 14-17 have been amended, and claims 18 and 19 have been added. Therefore, claims 1-19 are presented for reconsideration.

*B. Section 102 Rejection**1. Claims 1, 2, 5-13 are Not Anticipated*

Claims 1, 2, 5 through 13 stand rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent No. 6,538,592 to Yang *et al.* In light of the above claim amendments and the comments below, Applicant respectfully traverses.

Amended claim 1, recites, in pertinent part:

mixing the input signal with oscillator signals to produce a complex asymmetric input signal having a real component and an imaginary component.

Independent claims 5 and 11 recite a similar limitation. Support for the amendment may be found, for example, in FIGS. 8A, 8B, 9, and 10 and supporting text. In one example, the Specification discloses providing a signal to “mixers 803 and 804 along with quadrature local oscillator signals, $\text{SIN}\omega_1(t)$ and $\text{COS}\omega_1(t)$. The outputs of mixers 803 and 804 together represent a complex input signal $A + jB$ that is asymmetric relative to DC with the desired signal located at positive frequencies and the image of the desired signal located at negative frequencies (or vice versa).” (Specification, page 11, lines 17-21). This element is completely absent in the Yang reference.

In contrast, the Yang reference discloses an analog-to-digital converter (ADC) that varies power consumption based on whether a high-interference tone is present. *See* Summary of the Invention. Referring to FIG. 1 and supporting text of the Yang reference, input signal 12 is directly provided to ADC 5, and more particularly to “the first stage 20 only or both the first and second stages, 20 and 50.” Yang fails to teach or suggest mixing the input signal 12 with

oscillating signals to produce a complex input signal having a real component and an imaginary component.

Because the Yang reference lacks disclosure of explicit elements of the claims, it cannot serve as an anticipatory reference. Applicant respectfully requests the removal of the § 102 rejection to independent claims 1, 5, and 11, and all their respective dependent claims.

2. *Claim 17 is not Anticipated*

Claim 17 stands rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent No. 6,329,939 to Swaminathan *et al.* Applicant respectfully traverses.

The Office contends that the Swaminathan reference, and in particular, FIG. 7, anticipates all the elements of claim 17. Referring to page 5 of the Office Action, the Office states that “a complex sigma-delta analog to digital converter (300) coupled to the down converter, for converting only one of the real and imaginary components of the input signal into a complex digitized output signal (236, 238).” However, specific text and/or figures in the Swaminathan reference describing the alleged down-converter and its functions were not provided by the Office in support for this rejection.

Applicant asserts that the Swaminathan reference does not teach or suggest a down converter coupled to the input for mixing the modulated radio frequency signal with oscillating signals to produce an asymmetric baseband input signal having real and imaginary components, as recited in amended claim 17. Swaminathan discloses a filtering method to minimize mismatch errors. *See Summary of the Invention.* Referring to the complex filter of FIG. 6, Swaminathan discloses that quantizer **218**, a component of the filter, is “responsive to the quantizer input signal **216** and produces a real quantized output signal **228** and an imaginary quantized output signal **230**.”¹ (Column 6, lines 17-20). The filter and more specifically, the quantizer can not be construed as a down-converter.

For at least these reasons, the Swaminathan reference does not anticipate claim 17 and its dependent claims. Applicant respectfully requests the removal of the § 102 rejection.

¹ Similar reference numerals refer to similar elements throughout the figures and detailed descriptions. *See* column 2, lines 51-52 of the Swaminathan reference.

C. Section 103 Rejection

Claims 3, 4, and 14-16 stand rejected under 35 U.S.C § 103(a) as being allegedly unpatentable over the Swaminathan reference as applied to claim 17 in the § 102 rejection, in view of the Yang reference as applied to claim 1 in the § 102 rejection. In light of the claim amendments and the below comments, Applicant respectfully traverses.

1. Claims 3, 4, 14, and 15 are Not Unpatentable

As noted above, the Yang reference fails to disclose or render obvious the details of mixing the input signal with oscillator signals to produce a complex asymmetric input signal having a real component and an imaginary component, as recited in independent claims 1, 5, and 11. The Swaminathan reference does not supply the deficiencies.

Again, the Office relies on FIG. 7 of the Swaminathan reference and claims that “a down-converter (mixer)” is disclosed. See page 6 of the Office Action mailed 8/29/05. However, the Office fails to point out passages and/or figures within the Swaminathan reference that teaches or suggests a mixer and/or a down-converter, and more particularly the, functionality of such components that may render obvious the elements of claims 1, 5, and 11.

Applicant asserts that the Swaminathan reference fails to teach, suggest, or provide motivation to teach or suggest the step of mixing the input signal with oscillator signals to produce a complex asymmetric input signal having a real component and an imaginary component, as required by independent claims 1, 5, and 11. For at least the same reason, claims 3, 4, 14, and 15 are patentably distinct over the cited references. Removal of the § 103 rejection to claims 3, 4, and 15 is respectfully requested.

2. Claim 16 is Not Unpatentable

As noted above, the Swaminathan reference fails to disclose or render obvious the details of a down converter, as recited in claim 17. Claim 16 recites a similar limitation. In particular, the Swaminathan reference does not teach or suggest a down converter coupled to the input for mixing the modulated radio frequency signal with oscillating signals to produce an asymmetric input signal having real and imaginary components, as recited in amended claim 16.

Additionally, Yang does not provide the deficiencies. As noted above, the Yang reference fails to disclose mixing the input signal 12 with oscillating signals to produce a complex input signal having a real component and an imaginary component, and therefore, provides no motivation to teach or suggest a down converter, as required by claim 16.

For at least these reasons, neither the Swaminathan reference nor the Yang reference, separately or in combination, teach or suggest the elements of claim 16. Applicant respectfully requests the removal of the § 102 rejection.

D. New Claims 18 and 19

The present paper adds claims 18 and 19 which are directed to a frequency range of the asymmetric input signal. Support for claim 24 may be found, for example, in FIGs. 8A 8B, and 10 and supporting text of the Specification.

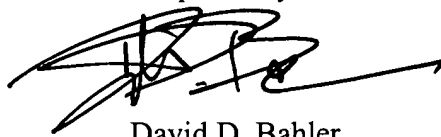
Claims 18 and 19 are dependent claims of independent claim 1. As noted above, claim 1 is patentably distinct over the Yang reference. Therefore, claims 18 and 19 are patentably distinct over the cited references for at least the same reasons.

CONCLUSION

Applicant believes the foregoing to be a full and complete response to the subject Office Action, and respectfully request the withdrawal of the rejections to claims, the allowance of claims 1-19, and the issuance of a timely Notice of Allowance.

Should the Examiner believe that a personal discussion would be helpful, he is encouraged to contact the undersigned attorney at 512/536-3005 with any questions, comments, or suggestions relating to the referenced patent application.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'D. Bahler', with a long horizontal flourish extending to the right.

David D. Bahler
Reg. No. 30,932
Attorney for Applicants

FULBRIGHT & JAWORSKI L.L.P.
600 Congress Avenue, Suite 2400
Austin, Texas 78701
Telephone: 512/536-3005
Facsimile: 512/536-4598

Date: November 29, 2005